FIG.1



Running Pattern on the day of the maximum electricity consumption (weekday in summer)

Present demand 1600 kW

Reduction to 1000kW

Before introducing NAS

After introducing NAS

Charge

Discharge

Demand (kW)

Time zone

1800 1600 1400 1200 1000 800 600 400 200 0

1~2 o'clock
2~3 o'clock
3~4 o'clock
4~5 o'clock
5~6 o'clock
6~7 o'clock
7~8 o'clock
8~9 o'clock
9~10 o'clock
10~11 o'clock
11~12 o'clock
12~13 o'clock
13~14 o'clock
14~15 o'clock
15~16 o'clock
16~17 o'clock
17~18 o'clock
18~19 o'clock
19~20 o'clock
20~21 o'clock
21~22 o'clock
22~23 o'clock
23~24 o'clock
0~1 o'clock

FIG.2



Running Pattern on the day of the maximum electricity consumption (weekday in summer)

Present demand 1600 kW

Before introducing NAS

Reduction to 1000kW

Discharge

After introducing NAS

Charge

Demand (kW)

1800　1600　1400　1200　1000　800　600　400　200　0

Time zone

1~2 o'clock
2~3 o'clock
3~4 o'clock
4~5 o'clock
5~6 o'clock
6~7 o'clock
7~8 o'clock
8~9 o'clock
9~10 o'clock
10~11 o'clock
11~12 o'clock
12~13 o'clock
13~14 o'clock
14~15 o'clock
15~16 o'clock
16~17 o'clock
17~18 o'clock
18~19 o'clock
19~20 o'clock
20~21 o'clock
21~22 o'clock
22~23 o'clock
23~24 o'clock
0~1 o'clock

FIG.3



Running Pattern on a summer holiday

Present demand 1600 kW

Before introducing NAS

Reduction to 1000kW

After introducing NAS

Discharge

Charge

Demand (kW)

Time zone

1~2 o'clock
2~3 o'clock
3~4 o'clock
4~5 o'clock
5~6 o'clock
6~7 o'clock
7~8 o'clock
8~9 o'clock
9~10 o'clock
10~11 o'clock
11~12 o'clock
12~13 o'clock
13~14 o'clock
14~15 o'clock
15~16 o'clock
16~17 o'clock
17~18 o'clock
18~19 o'clock
19~20 o'clock
20~21 o'clock
21~22 o'clock
22~23 o'clock
23~24 o'clock
0~1 o'clock

0
200
400
600
800
1000
1200
1400
1600
1800

FIG.4



FIG.4 — Running Pattern 1 in other season (weekday in May)

- Present demand 1600 kW
- Reduction to 1000kW
- Before introducing NAS
- After introducing NAS
- Charge
- Discharge

Demand (kW): 1800, 1600, 1400, 1200, 1000, 800, 600, 400, 200, 0

Time zone: 1~2 o'clock, 2~3 o'clock, 3~4 o'clock, 4~5 o'clock, 5~6 o'clock, 6~7 o'clock, 7~8 o'clock, 8~9 o'clock, 9~10 o'clock, 10~11 o'clock, 11~12 o'clock, 12~13 o'clock, 13~14 o'clock, 14~15 o'clock, 15~16 o'clock, 16~17 o'clock, 17~18 o'clock, 18~19 o'clock, 19~20 o'clock, 20~21 o'clock, 21~22 o'clock, 22~23 o'clock, 23~24 o'clock, 0~1 o'clock

FIG.5



FIG.5 Running Pattern 2 in other season (weekday in January)

- Present demand 1600 kW
- Reduction to 1000kW
- Before introducing NAS
- After introducing NAS
- Charge
- Discharge

Demand (kW): 1800, 1600, 1400, 1200, 1000, 800, 600, 400, 200, 0

Time zone: 1~2 o'clock, 2~3 o'clock, 3~4 o'clock, 4~5 o'clock, 5~6 o'clock, 6~7 o'clock, 7~8 o'clock, 8~9 o'clock, 9~10 o'clock, 10~11 o'clock, 11~12 o'clock, 12~13 o'clock, 13~14 o'clock, 14~15 o'clock, 15~16 o'clock, 16~17 o'clock, 17~18 o'clock, 18~19 o'clock, 19~20 o'clock, 20~21 o'clock, 21~22 o'clock, 22~23 o'clock, 23~24 o'clock, 0~1 o'clock

FIG.6



**Legend:**
- ● Weekday in May
- □ Weekday in July
- △ Sunday in July
- ◇ Weekday in January

Electricity consumption (kWh/h)

Time zone

FIG.7



Time zone

Electricity consumption (kWh/h)

FIG.8

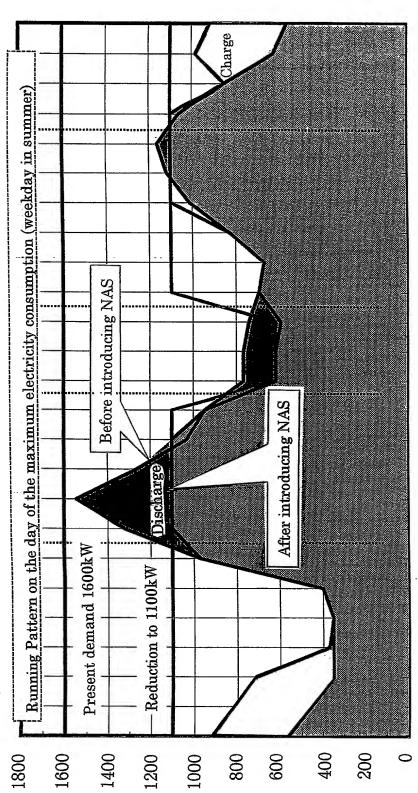| Electricity consumer |
| --- |
| Research into conditions of electricity consumption for the past one year<br>· Conditions of electricity consumption on a day of maximum demand<br>· Conditions of electricity consumption on a day of maximum electricity consumption |

| Electricity supplier |
| --- |
| Available electric fee system |
| Selection of optimum fee system having load-leveling effect and peak sharing effect<br>· Basic fee (¥/kW)<br>· Meter rate fee (¥/kWh) |

| Electric energy storage system |
| --- |
| Optimization of scale of system<br>· Required amount of electric energy storage (kWh)<br>· Maximum out put (kW) × Continuous time (h) |

| Method for operating system |
| --- |
| Determination of running program having large effect in reducing fee<br>· Each running day<br>Discharge output × Time zone<br>Charge input × Time zone |
| Automatic run by running program |
| Emergency run by changing program |

| Observation of operation conditions of system |
| --- |
| Review of running program by changing optimum electric fee system and conditions |
| Change of running program for unexpected demand |

System flow from setting up to storage system
operation of electric energy

FIG.9



Running Pattern on the day of the maximum electricity consumption (weekday in summer)

Present demand 1600kW

Reduction to 1100kW

Before introducing NAS

After introducing NAS

Discharge

Charge

Demand (kW)

Time zone

1~2 o'clock
2~3 o'clock
3~4 o'clock
4~5 o'clock
5~6 o'clock
6~7 o'clock
7~8 o'clock
8~9 o'clock
9~10 o'clock
10~11 o'clock
11~12 o'clock
12~13 o'clock
13~14 o'clock
14~15 o'clock
15~16 o'clock
16~17 o'clock
17~18 o'clock
18~19 o'clock
19~20 o'clock
20~21 o'clock
21~22 o'clock
22~23 o'clock
23~24 o'clock
0~1 o'clock

1800
1600
1400
1200
1000
800
600
400
200
0

# FIG.10

Running Pattern on the day of the maximum electricity consumption (weekday in summer)

Present demand 1600kW

Reduction to 1200kW

Before introducing NAS

Discharge

After introducing NAS

Charge

**Demand (kW)**

1800
1600
1400
1200
1000
800
600
400
200
0

**Time zone**

1~2 o'clock
2~3 o'clock
3~4 o'clock
4~5 o'clock
5~6 o'clock
6~7 o'clock
7~8 o'clock
8~9 o'clock
9~10 o'clock
10~11 o'clock
11~12 o'clock
12~13 o'clock
13~14 o'clock
14~15 o'clock
15~16 o'clock
16~17 o'clock
17~18 o'clock
18~19 o'clock
19~20 o'clock
20~21 o'clock
21~22 o'clock
22~23 o'clock
23~24 o'clock
0~1 o'clock

FIG.11



Running Pattern on the day of the maximum electricity consumption (weekday in summer)

Before introducing NAS

Present demand 1600kW

Discharge

Reduction to 900kW

After introducing NAS

Charge

Demand (kW)

Time zone

1~2 o'clock
2~3 o'clock
3~4 o'clock
4~5 o'clock
5~6 o'clock
6~7 o'clock
7~8 o'clock
8~9 o'clock
9~10 o'clock
10~11 o'clock
11~12 o'clock
12~13 o'clock
13~14 o'clock
14~15 o'clock
15~16 o'clock
16~17 o'clock
17~18 o'clock
18~19 o'clock
19~20 o'clock
20~21 o'clock
21~22 o'clock
22~23 o'clock
23~24 o'clock
0~1 o'clock

1800
1600
1400
1200
1000
800
600
400
200
0